REMARKS

Status of the Claims

Claims 1-7, 9-13, 20 and 23-28 are being examined in the present application, with claims 1 and 20 being independent claims, and claims 14-19, 21, and 22 being directed to a non-elected species. Claims 1 and 20 are amended. Reconsideration of claims 1-7 and 9-28 is respectfully requested.

Amendments to the Claims

At the outset, it is noted that these claim amendments are made relative to the claims that were pending at the time that the Final Office Action of November 8, 2006 was mailed, Applicants' response mailed February 8, 2007 not being entered.

Claim 1 is amended to recite that the tissue slice is "dimensioned and capable of acting as a cell source that migrates cells out of the tissue slice to proliferate and integrate with tissue at the injury or defect." Support for this recitation is found throughout U.S. Patent Application Publication No. US 2005/0125077 A1, corresponding with the published version of the present application (herein the "Published Application"). For example, paragraphs [0030] and [0037] of the Published Application describe that a tissue slice can be dimensioned to allow cells to migrate out of a slice to proliferate and integrate with tissue surrounding the repair site, and that a tissue slice can serve as a source of viable cells. As well, claim 4 is amended to remove the recitation regarding dimensioning of the tissue implant, while adding the step of "migrating cells out of the tissue slice to proliferate and integrate with tissue at the tissue site. Accordingly, the amendments do not add new matter.

Patentability

A. Novelty over Papadopulos

Claims 1-3, 9, 20, 25 and 28 currently stand rejected under 35 U.S.C. §102(b) as being anticipated by Angel M.D. Papadopulos, "Compound Implant to Project the Nasal Tip," Aesthetic Plastic Surgery 181-185 (1987) (herein "Papadopulos"). The reference, however, does

not anticipate the claims because Papadopulos neither teaches nor suggests the recitations of the independent claims.

Amended claim 1 is directed toward a biocompatible tissue implant comprising a naturally occurring biological tissue slice that includes an effective amount of viable cells. The tissue slice is dimensioned and capable of acting as a cell source that migrates cells out of the tissue slice to proliferate and integrate with tissue at an injury or defect.

As discussed in paragraphs [0005] and [0006] of the Published Application, current tissue engineering techniques for tissue repair typically replace or reconstruct damaged or injured tissue with cells that have been manipulated ex vivo to stimulate new tissue growth. As such they require multiple steps such as harvesting, isolation, culturing, and amplification. As well, two separate surgeries are necessary for both harvesting and subsequent implantation. In contrast, the implant of claim 1 utilizes a tissue slice that acts as a cell source such that cells can migrate out of the slice to proliferate and integrate with tissue at an injury or defect. Accordingly, the labor-intensive steps of preparing individual cells for tissue repair can potentially be avoided. Examples 1-3 in the Published Application provide experiments to demonstrate an implant within the scope of claim 1.

Papadopulos provides no teaching or suggestion regarding a tissue slice "capable of acting as *a cell source that migrates cells out of the tissue slice to proliferate and integrate with tissue at the injury or defect.*" The reference only discloses the use of septal or alar cartilage that can act as a portion of an implant to shape the nasal tip (see Papadopulos, abstract). The implant, however, is purely used for nasal tip projection. There is no discussion or even hint that the implant includes a tissue slice that can act as a cell source. Furthermore, there is no indication that the cells in the implant would migrate out to proliferate and integrate with tissue at the injury or defect. Indeed, Papadopulos suggests that silastic, a silicone rubber, can be used in place of septal cartilage. Accordingly, the reference does not even hint of an implant consistent with the recitations of amended claim 1.

Claim 2, 3, and 9 all depend ultimately from amended claim 1. Accordingly, they are each novel for at least the same reasons that claim 1 is novel.

Amended claim 20 is directed to a method for repairing a tissue injury or defect. The method includes the steps of providing a biocompatible tissue implant comprising a naturally

occurring biological tissue slice, and migrating cells out of the tissue slice to proliferate and integrate with tissue at the tissue site. For the reasons stated above, Papadopulos neither suggests nor hints of a tissue slice that includes cells that migrate out of the slice to proliferate and integrate with tissue at a tissue site. Accordingly, the reference also does not anticipate amended claim 20.

Claims 25 and 28 each depend ultimately from claim 20. Accordingly, they are each novel for at least the same reasons that amended claim 20 is novel.

B. Nonobviousness over Papadopulos and Brauker

Claims 4-6, 10-13, 23, 24, 26 and 27 currently stand rejected under 35 U.S.C. §103(a) as being unpatentable over Papadopulos in view of U.S. Patent No. 6,773,458 to Brauker et al. (herein "Brauker"). Applicants disagree that the cited art renders the claims unpatentable because the cited combination fails to teach the elements of the claims.

Claims 4-6 and 10-13 each depend from amended claim 1. As discussed earlier, Papadopulos fails to teach all the elements of amended claim 1. Furthermore, Brauker fails to provide any disclosure or hint regarding naturally occurring tissue slices whatsoever; its implants are artificial constructs that are filled with cells. Thus, in no way can Brauker suggest a naturally-occurring tissue slice that acts as a cell source where cell migrate therefrom to proliferate and integrate with tissue at a tissue site. Accordingly, neither reference discloses the invention of amended claim 1, nor can the references be combined to disclose the elements of claim 1. Therefore, none of claims 4-6 and 10-13 are obvious in light of Papadopulos and Brauker.

Claims 4-6 and 10-13 are also patentable for other independent reasons. For example, claim 4 recites that the tissue slice has a thickness less than about 3 mm. Claim 4 is not anticipated or obvious in light of any combination of Papadopulos and Brauker because neither reference teaches or suggests any thickness for a naturally occurring tissue slice, let alone a tissue slice less than about 3 mm . As stated in the Final Office Action, Papadopulos does not disclose a tissue slice with a thickness less than 3 mm (see Final Office Action dated November 8, 2006, page 3, first full paragraph). Indeed, Papadopulos does not teach that its implant includes an effective amount of viable cells that can migrate out of the slice to proliferate and integrate with tissue at an injury or defect. Papadopulos is directed to a nose-tip shaping

implant. The use of the implant to migrate viable cells out of the implant is not suggested at all. Furthermore, Brauker fails to provide any disclosure or hint regarding naturally occurring tissue slices whatsoever; its implants are artificial constructs that are filled with cells. Accordingly, neither reference discloses the invention of claim 4, nor can the references be combined to disclose the elements of claim 4.

Though the Office Action asserts it would have been an obvious matter of design choice to modify the thickness of the implants in Papadopulos, Applicants disagree because modification of the thickness would have rendered Papadopulos inoperable for its intended purpose. Papadopulos is directed to a nose implant for projecting a nasal tip in cosmetic surgery when a patient has thick skin, a depressed or slightly descending tip, and a minimal bony hump (see Papadopulos, abstract). In particular, the reference discloses the use of septal cartilage as a "tent pole" to support implant (see id., page 181, column 2), and the use of alar cartilages to shape the tip of the implant (see id.). Accordingly, one skilled in the art would not modify the cartilages of Papadopulos to have a thickness less than about 3 mm because the cartilages would be too thin to support the nose shaping implant. The septal cartilage being less than 3 mm thick would not function as a "tent pole." As well, an alar cartilage less than about 3 mm thick would not act as an appropriate structure for shaping the new nose tip of a patient with *thick skin*. Papadopulos states that cuts need to be made in the alar cartilage tip so that they open like eagle wings to give shape to the tip (see id.). Accordingly, use of the thickness recitation of claim 1 would not allow the Papadopulos implant to perform as discussed in the reference; such alteration would actually result in a structure that is too thin to perform the shaping intended, rendering the structure inoperable. Accordingly, the thickness recitation of claim 4 is not a design choice of a skilled artisan to be applied to Papadopulos.

As well, a skilled artisan would also lack motivation to alter the implant of Papadopulos to practice an implant consistent with amended claim 4. The skilled artisan would only alter Papadopulos in such a way as to properly give a desired shape to a patient's nose tip. There would be no motivation to alter the Papadopulos implant to the dimensions recited in claim 4 since the implant would be structurally too fragile to properly shape the nose tip.

For all these additional reasons, the cited art cannot sustain a prima facie case of obviousness against claim 4. Claims 5 and 6 provide additional thickness recitations to a tissue

slice. Accordingly, claims 5 and 6 are also patentable for the reasons that claim 4 is independently patentable.

Claims 23, 24, 26, and 27 each depend ultimately from amended claim 20. Amended claim 20 is patentable over the combination of Papadopulos and Brauker because neither reference teaches or suggests a method of repairing a tissue injury or defect in which cells migrate out of a naturally occurring tissue slice to proliferate and integrate with tissue at the tissue site. As discussed before, Papadopulos fails to disclose migrating cells from a tissue slice, and Brauker makes no mention of natural tissue slices whatsoever. Accordingly, claim 20, and dependent claims 23, 24, 26, and 27 therefrom, are all nonobvious in light of Papadopulos and Brauker.

Accordingly, all of claims 4-6, 10-13, 23, 24, 26 and 27 are patentable.

C. Rejoining of Claims 7, 14-19, 21, and 22

Claims 7, 14-19, 21, and 22 are currently withdrawn as being associated with a non-elected species. Amended claims 1 and 20, from which these claims depend, are patentable for at least the reasons stated above. Accordingly, Applicants respectfully request that each of claims 7, 14-19, 21, and 22 be rejoined and allowed since they are each a species of at least one generic allowable claim.

CONCLUSION

In view of the remarks above, Applicant submits that claims 1-7 and 9-28 are in condition for allowance, and allowance thereof is respectfully requested. Applicant encourages the Examiner to telephone the undersigned in the event that such communication might expedite prosecution of this matter.

In the event that a petition for an extension of time is required to be submitted at this time, Applicant hereby petitions under 37 CFR 1.136(a) for an extension of time for as many months as are required to ensure that the above-identified application does not become abandoned.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 141449, under Order No. 22956-235.

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Respectfully submitted,

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